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09/423,534	12/14/1999	MATTHIAS LAU	1-14746	6863

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EXAMINER

LUU, THANH X

ART UNIT PAPER NUMBER

2878

DATE MAILED: 04/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/423,534

Applicant(s)

LAU, MATTHIAS

Examiner

Thanh X Luu

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to amendments and remarks filed February 19, 2002. Claims 23-44 are currently pending.

Claim Objections

1. Claims 23, 24, 28-31, 35, 39 and 41 are objected to because of the following informalities:

In claim 23, "the at least one first optical conductors", "the at least one second optical conductors" and "one of the second optical conductors" lack proper antecedent basis.

In claim 24, "the outer ends" and "the optical conductors" lacks proper antecedent basis. It is unclear if the term refers to the first or second or both optical conductors.

In claim 28, "the at least one second optical conductors for the exciting light and the reference light", "the exciting light" and "the reference light" lack proper antecedent basis.

In claim 29, "exciting light" and "reference light" lack proper antecedent basis.

In claim 30, "the upper measuring head region" lacks proper antecedent basis.

In claim 31, "exciting light" lacks proper antecedent basis.

In claim 35, "the optical conductor" and "the angular surfaces" lack proper antecedent basis.

In claim 39, "the optical conductors", "the fluorescence-exciting light" lack proper antecedent basis.

In claim 41, "light" lacks proper antecedent basis. Which light is directed?

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 23-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 23, it is unclear in its given context how end faces are arranged relative to one another "as a function of the at least one layer containing a fluorescing material." It is also unclear how at least one second optical conductor are arranged as a bundle in the shape of a ring are arranged with the at least one second optical conductor arranged in the interior of the ring. Furthermore, Applicant claims the second optical conductor as conducting light to a detector (line 7), and then Applicant claims the second optical conductor bundle is used for exciting light or generating fluorescent light. Such limitations are conflicting. Also, it is unclear how a bundle can "generate fluorescent light." In addition, it is unclear what Applicant means with the phrase "such that it is possible to achieve a localized distribution of measurable fluorescence intensity." Lastly, it is unclear how many optical conductors and which optical conductors are being referred to in the claim.

In claim 24, it is unclear what the outer ends refer to. Are the outer ends the same as the end faces?

In claim 26, it is unclear how an element can be arranged between a detector and a first optical conductor since a second optical conductor is used to direct light to the detector.

In claim 28, it is unclear in its given context how at least one second optical conductors or a further fluorescent light can be arranged in an alternating fashion. That is, how can a single element alternating with itself? It is also unclear how a further fluorescent light can be disposed in a ring. Fluorescent light comes from the layer.

In claim 31, it is unclear what "is surrounded there by a medium of lower refractive index." It is also unclear what "there" refers to.

In claim 32, it is unclear which conductor "at least one optical conductor" refers to.

In claim 42, it is unclear how the upper and lower regions fit into the rest of the invention.

In claim 43, it is unclear in its given context how the device is "configured" to detect fluorescence-quenching, fluid materials.

The other claims are indefinite by virtue of their dependency on an indefinite claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 23-29, 31-37, 39-41 and 43, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Pederson et al. (U.S. Patent 5,319,975).

Regarding claims 23, 26, 29, 39 and 43, Pederson et al. disclose (see Figures 1 and 6) a device detecting fluorescence-quenching (see column 3, lines 42-44) and for measuring fluorescence excited by light, which has at least one layer (8) applied to a support (6) or a transparent body, the layer contains a fluorescing material, the device having at least one light source (61) which emits light of at least one wavelength that excites the fluorescence in the layer, the light is directed through the support onto the layer by at least one first optical conductor (10), the fluorescence being directed by at least one second optical conductor (12) onto at least one detector (69) for determining the intensity of the fluorescence, the optical conductors are inclined at different angles (at 2), characterized in that the end faces of the first and second optical conductors are arranged relative to one another and applied to the support, the first and second optical conductors are arranged opposite one another in a pair. Pederson et al. further disclose (see Figure 6) a filter (63) arranged between the light source and the first optical conductor. Pederson et al. also disclose a housing (4) for holding the optical conductors. Pederson et al. do not specifically disclose the light source, the detector and the optical conductors held in a measuring head. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to dispose the elements of Pederson et al. in a measuring head to provide a compact and portable device. Further, since the Pederson et al. already teaches of the functional elements of the present invention, it would require only routine skill in the art to dispose those

elements within a single housing.

Regarding claims 24 and 25, Pederson et al. do not specifically disclose the structure of the measuring head. However, the specific structure of a measuring head or housing is a matter of design choice. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to make the measuring head or housing of the device of Pederson et al. flexible or partially bent in order to more easily maneuver the device upon use or to make the device fit more easily into certain spaces.

Regarding claim 27, Pederson et al. discloses (see Figure 1) two optical conductors arranged pointing towards the layer. Pederson et al. do not disclose enough conductors to make up a ring shape. However, the number and arrangement of optical conductors is a matter of design choice. It is well known in the art to bundle smaller optical conductors to make up a larger optical conductor as desired. Furthermore, a ring shape arrangement is the most optimal arrangement for bundling optical conductors. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide further optical conductors arranged in the shape of a ring in the device of Pederson et al. to reduce costs or provide more light as desired.

Regarding claim 28, Pederson et al. further do not disclose an outer ring and an inner ring. However, an arrangement in which optical conductors carrying light to a target is arranged in an outer ring and optical conductors carrying light from the target to a detector is arranged in an inner ring is notoriously well known. It would have been

obvious to a person of ordinary skill in the art at the time the invention was made to provide such an arrangement in the apparatus of Pederson et al. in order to provide more uniform illumination and improve detection.

Regarding claims 31, 33 and 34, Pederson et al. disclose (see Figure 1) the support is transparent and mounted in an exchangeable fashion in a housing. Pederson et al. further disclose the support is constructed in an elongated fashion in a plane. Pederson et al. do not specifically disclose the type of support. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide at least a partially polished support region in the apparatus of Pederson et al. in order to obtain better detection. Furthermore, the division of the support into different regions is a matter of design choice.

Regarding claim 32, Pederson et al. do not disclose the reflections as claimed. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide total reflection as claimed in the apparatus of Pederson et al. in order to obtain maximum fluorescence and improve detection.

Regarding claims 35-37, Pederson et al. do not disclose the support having an angular surface or a u-shape as claimed. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the support of Pederson et al. with an angular surface or a u-shape to diverge or separate the exciting light and the fluorescent light and improve detection. The particular arrangement of the u-shape is a matter of design choice.

Regarding claim 40, Pederson et al. do not disclose the transparent body (6)

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being wavelength-selective. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to make the body (6) of Pederson et al. wavelength-selective in order to reduce unwanted radiation and improve detection.

Regarding claim 41, Pederson et al. only disclose one detector. Pederson et al. do not disclose a further detector as claimed. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a further detector in the apparatus of Pederson et al. to monitor the light source for failure.

6. Claims 30, 38, 42 and 44, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Pederson et al. as applied to claim 23 above, and further in view of Wagner (U.S. Patent 5,001,054) and Bessman et al. (U.S. Patent 4,431,004).

Regarding claims 30, 38 and 44, Pederson et al. do not disclose a heater or a temperature sensor as claimed. Wagner discloses (see Figure 2) using a device having conductors and a fluorescing layer for monitoring glucose. Bessman et al. further disclose (see column 2, lines 37-45) that glucose sensors are temperature dependent and (see Figure 4) disposing a temperature sensor proximate a glucose sensor. Thus, Wagner recognizes that the device of Pederson et al. can be modified to detect glucose and Bessman et al. recognize the sensitivity of glucose sensors to temperature. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a heater and a temperature sensor in the apparatus of Pederson et al. in view of Wagner and Bessman et al. to obtain better detection. The heater and temperature sensor can be introduced into the support of Pederson et al. in view of

Wagner and Bessman et al. as desired.

Regarding claim 42, Pederson et al. do not disclose insulating the light source and detector. However, as stated above, Bessman et al. discloses that monitoring glucose is dependent on temperature. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to insulate the light source and detector in the apparatus of Pederson et al. in view of Wagner and Bessman et al. to reduce the affect of the heat from the light source and detector from affecting the detection, and thereby improve detection.

Response to Arguments

Applicant's arguments filed February 18, 2002 have been fully considered but they are not persuasive.

Applicant argues that the prior art does not disclose the arrangement as a function of the numerical apertures. However, that limitation is optional. Applicant claims the optical conductors "are arrange relative to one another as function of their numerical apertures and/or as a function of the at least one layer..." Since the prior art arranges the conductors at a certain distance from the layer, the prior art does provide an arrangement as a function of the at least one layer as claimed. Applicant further argues that the prior art does not provide a fast response, however, a fast response is not claimed.

Thus, the final rejection, as set forth above, is proper.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is (703) 305-0539. The examiner can normally be reached on Monday-Friday from 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seungsook Ham, can be reached on (703) 308-4090. The fax phone number for the organization where the application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

txl
April 11, 2002


Que T. Le
Primary Examiner